

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Holladay, Leslie A.
- (ii) TITLE OF INVENTION: MODIFICATION OF POLYPEPTIDE DRUGS TO INCREASE ELECTROTRANSPORT FLUX
- (iii) NUMBER OF SEQUENCES: 10
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: Stroud, Stroud, Willink, Thompson & Howard
  - (B) STREET: 25 West Main Street
  - (C) CITY: Madison
  - (D) STATE: WI
  - (E) COUNTRY: USA
  - (F) ZIP: 53701-2236
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER:
  - (B) FILING DATE:
  - (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Frenchick, Grady J.
  - (B) REGISTRATION NUMBER: 29,018
  - (C) REFERENCE/DOCKET NUMBER: 8734.28
- (ix) TELECOMMUNICATION INFORMATION:
  - (A) TELEPHONE: 608-257-2281
  - (B) TELEFAX: 608-257-7643

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 174 amino acids
  - (B) TYPE: amino acid
  - (D) TOPOLOGY: linear
- (ix) FEATURE:
  - (A) NAME/KEY: Peptide
  - (B) LOCATION: 1..174
  - (D) OTHER INFORMATION: /note= "granulocyte-colony stimulating factor"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Thr	Pro	Leu	Gly	Pro	Ala	Ser	Ser	Leu	Pro	Gln	Ser	Phe	Leu	Leu	Lys
1				5					10					15	
Cys	Leu	Glu	Gln	Val	Arg	Lys	Ile	Gln	Gly	Asp	Gly	Ala	Ala	Leu	Gln
			20					25					30		
Glu	Lys	Leu	Cys	Ala	Thr	Tyr	Lys	Leu	Cys	His	Pro	Glu	Glu	Leu	Val
		35					40					45			
Leu	Leu	Gly	His	Ser	Leu	Gly	Ile	Pro	Trp	Ala	Pro	Leu	Ser	Ser	Cys
	50					55					60				
Pro	Ser	Gln	Ala	Leu	Gln	Leu	Ala	Gly	Cys	Leu	Ser	Gln	Leu	His	Ser
65					70					75					80
Gly	Leu	Phe	Leu	Tyr	Gln	Gly	Leu	Leu	Gln	Ala	Leu	Glu	Gly	Ile	Ser
				85					90					95	
Pro	Glu	Leu	Gly	Pro	Thr	Leu	Asp	Thr	Leu	Gln	Leu	Asp	Val	Ala	Asp
			100					105					110		
Phe	Ala	Thr	Thr	Ile	Trp	Gln	Gln	Met	Glu	Glu	Leu	Gly	Met	Ala	Pro
		115					120					125			
Ala	Leu	Gln	Pro	Thr	Gln	Gly	Ala	Met	Pro	Ala	Phe	Ala	Ser	Ala	Phe
	130					135					140				
Gln	Arg	Arg	Ala	Gly	Gly	Val	Leu	Val	Ala	Ser	His	Leu	Gln	Ser	Phe
145					150					155					160
Leu	Glu	Val	Ser	Tyr	Arg	Val	Leu	Arg	His	Leu	Ala	Gln	Pro		
				165					170						

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 174 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..174
- (D) OTHER INFORMATION: /note= "modified granulocyte-colony stimulating factor"

"FOOTPRINT" 409403-1001

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Thr	Pro	Leu	Gly	Pro	Ala	Ser	Ser	Leu	Pro	His	Ser	Phe	Leu	Leu	Lys
1				5				10						15	
Cys	Leu	Glu	Gln	Val	Arg	Lys	Ile	Gln	Gly	Asp	Gly	Ala	Ala	Leu	Gln
			20					25					30		
Glu	Lys	Leu	Cys	Ala	Thr	Tyr	Lys	Leu	Cys	His	Pro	Glu	Glu	Leu	Val
		35					40					45			
Leu	Leu	Gly	His	Ser	Leu	Gly	Ile	Pro	Trp	Ala	Pro	Leu	Ser	Ser	Cys
	50					55					60				
Pro	Ser	Gln	Ala	Leu	Gln	Leu	Ala	Gly	Cys	Leu	Ser	Gln	Leu	His	Ser
65					70					75					80
Gly	Leu	Phe	Leu	Tyr	Gln	Gly	Leu	Leu	Gln	Ala	Leu	Glu	Gly	Ile	Ser
				85					90					95	
Pro	Glu	Leu	Gly	Pro	Thr	Leu	Asp	Thr	Leu	Gln	Leu	Asp	Val	Ala	Asp
			100					105					110		
Phe	Ala	Thr	Thr	Ile	Trp	Gln	Gln	Met	Glu	Glu	Leu	Gly	Met	Ala	Pro
		115					120					125			
Ala	Leu	Gln	Pro	Thr	Gln	Gly	Ala	Met	Pro	Ala	Phe	Ala	Ser	Ala	Phe
		130				135					140				
Gln	Arg	Arg	Ala	Gly	Gly	Val	Leu	Val	Ala	Ser	His	Leu	Gln	Ser	Phe
145					150					155					160
Leu	Glu	Val	Ser	Tyr	Arg	Val	Leu	Arg	His	Leu	Ala	Gln	Pro		
				165					170						

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 174 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..174
- (D) OTHER INFORMATION: /note= "modified granulocyte-colony stimulating factor"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Thr	Pro	Leu	Gly	Pro	Ala	Ser	Ser	Leu	Pro	His	Ser	Phe	Leu	Leu	Lys
1				5					10					15	
Cys	Leu	Glu	His	Val	Arg	Lys	Ile	Gln	Gly	Asp	Gly	Ala	Ala	Leu	Gln
			20					25					30		
Glu	Lys	Leu	Cys	Ala	Thr	Tyr	Lys	Leu	Cys	His	Pro	Glu	Glu	Leu	Val
		35					40					45			
Leu	Leu	Gly	His	Ser	Leu	Gly	Ile	Pro	Trp	Ala	Pro	Leu	Ser	Ser	Cys
	50					55					60				
Pro	Ser	Gln	Ala	Leu	Gln	Leu	Ala	Gly	Cys	Leu	Ser	Gln	Leu	His	Ser
65					70				75						80
Gly	Leu	Phe	Leu	Tyr	Gln	Gly	Leu	Leu	Gln	Ala	Leu	Glu	Gly	Ile	Ser
				85					90					95	
Pro	Glu	Leu	Gly	Pro	Thr	Leu	Asp	Thr	Leu	Gln	Leu	Asp	Val	Ala	Asp
			100					105					110		
Phe	Ala	Thr	Thr	Ile	Trp	Gln	Gln	Met	Glu	Glu	Leu	Gly	Met	Ala	Pro
		115					120					125			
Ala	Leu	Gln	Pro	Thr	Gln	Gly	Ala	Met	Pro	Ala	Phe	Ala	Ser	Ala	Phe
	130					135					140				
Gln	Arg	Arg	Ala	Gly	Gly	Val	Leu	Val	Ala	Ser	His	Leu	Gln	Ser	Phe
145					150					155					160
Leu	Glu	Val	Ser	Tyr	Arg	Val	Leu	Arg	His	Leu	Ala	Gln	Pro		
				165					170						

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 174 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..174
- (D) OTHER INFORMATION: /note= "granulocyte-colony stimulating factor"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Thr	Pro	Leu	Gly	Pro	Ala	Ser	Ser	Leu	Pro	Gln	Ser	Phe	Leu	Leu	Lys	1	5	10	15
Cys	Leu	Glu	Gln	Val	Arg	Lys	Ile	Gln	Gly	Asp	Gly	Ala	Ala	Leu	Gln	20	25	30	
Glu	Lys	Leu	Cys	Ala	Thr	Tyr	Lys	Leu	Cys	His	Pro	Glu	Glu	Leu	Val	35	40	45	
Leu	Leu	Gly	His	Ser	Leu	Gly	Ile	Pro	Trp	Ala	Pro	Leu	Ser	Ser	Cys	50	55	60	
Pro	Ser	Gln	Ala	Leu	Gln	Leu	Ala	Gly	Cys	Leu	Ser	Gln	Leu	His	Ser	65	70	75	80
Gly	Leu	Phe	Leu	Tyr	Gln	Gly	Leu	Leu	Gln	Ala	Leu	Glu	Gly	Ile	Ser	85	90	95	
Pro	Glu	Leu	Gly	Pro	Thr	Leu	Asp	Thr	Leu	His	Leu	Asp	Val	Ala	Asp	100	105	110	
Phe	Ala	Thr	Thr	Ile	Trp	His	His	Met	Glu	Glu	Leu	Gly	Met	Ala	Pro	115	120	125	
Ala	Leu	His	Pro	Thr	His	Gly	Ala	Met	Pro	Ala	Phe	Ala	Ser	Ala	Phe	130	135	140	
His	Arg	Arg	Ala	Gly	Gly	Val	Leu	Val	Ala	Ser	His	Leu	His	Ser	Phe	145	150	155	160
Leu	Glu	Val	Ser	Tyr	Arg	Val	Leu	Arg	His	Leu	Ala	His	Pro	165	170				

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 34 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..34
- (D) OTHER INFORMATION: /note= "parathyroid hormone"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Ser	Val	Ser	Glu	Ile	Gln	Leu	Met	His	Asn	Leu	Gly	Lys	His	Leu	Asn	1	5	10	15
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	---	---	----	----

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His  
20 25 30

Asn Phe

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 34 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

- (ix) FEATURE:  
(A) NAME/KEY: Peptide  
(B) LOCATION: 1..34  
(D) OTHER INFORMATION: /note= "modified parathyroid hormone"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Ser Val Ser Glu Ile His Leu Met His Asn Leu Gly Lys His Leu Asn  
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His  
20 25 30

Asn Phe

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 34 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

- (ix) FEATURE:  
(A) NAME/KEY: Peptide  
(B) LOCATION: 1..34  
(D) OTHER INFORMATION: /note= "modified parathyroid hormone"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Ser Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn  
1 5 10 15

Ser Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu His Asp Val His  
20 25 30

Asn Phe

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 44 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..44
- (D) OTHER INFORMATION: /note= "human growth hormone releasing hormone"

(ix) FEATURE:

- (A) NAME/KEY: Binding-site
- (B) LOCATION: 44
- (D) OTHER INFORMATION: /note= "carboxy terminal amide"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Tyr	Ala	Asp	Ala	Ile	Phe	Thr	Asn	Ser	Tyr	Arg	Lys	Val	Leu	Gly	Gln
1				5					10					15	
Leu	Ser	Ala	Arg	Lys	Leu	Leu	Gln	Asp	Ile	Met	Ser	Arg	Gln	Gln	Gly
			20				25						30		
Glu	Ser	Asn	Gln	Glu	Arg	Gly	Ala	Arg	Ala	Arg	Leu				
			35				40								

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 44 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1..44
- (D) OTHER INFORMATION: /note= "modified hormone growth hormone releasing hormone"

(ix) FEATURE:

- (A) NAME/KEY: Binding-site
- (B) LOCATION: 44
- (D) OTHER INFORMATION: /note= "carboxy terminal amide"

Tyr Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln  
1 5 10 15  
Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg Gln His Gly  
20 25 30  
Glu Ser Asn His Glu Arg Gly Ala Arg Ala Arg Leu  
35 40

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 44 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(A) NAME/KEY: Peptide  
(B) LOCATION: 1..44  
(D) OTHER INFORMATION: /note= "modified human growth hormone release hormone"

(A) NAME/KEY: Binding-site  
(B) LOCATION: 44  
(D) OTHER INFORMATION: /note= "carboxy terminal amide"

Tyr 1	Ala	Asp	Ala	Ile 5	Phe	Thr	Asn	Ser	Tyr 10	Arg	Lys	Val	Leu	Gly 15	His
Leu	Ser	Ala	Arg 20	Lys	Leu	Leu	His	Asp 25	Ile	Met	Ser	Arg	His 30	His	Gly
Glu	Ser	Asn 35	Gln	Glu	Arg	Gly 40	Ala	Arg	Ala	Arg	Leu				